

What is claimed is:

1. A liquid crystal display comprising:
a pair of substrates provided opposite to each other and having electrodes;

a liquid crystal sealed between the pair of substrates;
and

a pixel region including one or a plurality of low effective voltage areas in which an effective voltage applied to the liquid crystal is lower than a voltage applied between the electrodes, the low effective voltage areas occupying part of the region in a predetermined area ratio, the pixel region having a threshold voltage that is different between the one or plurality of low effective voltage areas and another area.

2. A liquid crystal display according to claim 1, wherein:
the pixel region has a plurality of color filter layers which are formed at least either of the pair of substrates and which have center transmission wavelengths λ_k ($k = 1, 2, \dots, N$; $N > 2$); and

a cell thickness d_k of each pixel region having at least two kinds among the color filter layers satisfies a relationship expressed by:

$$|\Delta n(\lambda_i) \cdot d_i / \lambda_i - \Delta n(\lambda_j) \cdot d_j / \lambda_j| < 0.2$$

$$(i, j = 1, 2, \dots, N; i \neq j)$$

where $\Delta n(\lambda)$ represents birefringence of liquid crystal molecules against a wavelength λ .

3. A liquid crystal display according to claim 1, wherein:

the pixel region has a plurality of color filter layers which are formed at least either of the pair of substrates and which have center transmission wavelengths λ_k ($k = 1, 2, \dots, N$; $N > 2$); and

the product of the cell thickness d_k of each pixel region having the color filter layer whose center transmission wavelength λ_k is closest to 545 nm and birefringence $\Delta n(\lambda_k)$ of liquid crystal molecules against the center transmission wavelength λ_k satisfies a relationship expressed by:

$$250 \text{ nm} < \Delta n(\lambda_k) \cdot d_k < 450 \text{ nm}.$$

4. A liquid crystal display according to claim 1, wherein:

the pixel region has a plurality of color filter layers which are formed at least either of the pair of substrates and which have center transmission wavelengths λ_k ($k = 1, 2, \dots, N$; $N > 2$);

a cell thickness d of the pixel region is substantially constant regardless of the center transmission wavelengths λ_k ;

effective retardation $\Delta n(\lambda_k, \theta_k)$ of the liquid crystal layer at the time of application of a data voltage V_k that imparts a tilt angle θ_k to liquid crystal molecules satisfies a relationship expressed by:

$$|\Delta n(\lambda_i, \theta_i) \cdot d / \lambda_i - \Delta n(\lambda_j, \theta_j) \cdot d / \lambda_j| < 0.2$$

$$(i, j = 1, 2, \dots, N; i \neq j)$$

between pixel regions each having two kinds among the color filter layers; and

chromaticity (x_0, y_0) of an incident light source which has been transmitted or reflected by the liquid crystal display panel and chromaticity (x_1, y_1) of display of white satisfy

a relationship expressed by:

$$((x_0 - x_1)^2 + (y_0 - y_1)^2)^{1/2} < 0.1$$

when no polarizer is provided.

5. A liquid crystal display according to claim 1, wherein:
the pixel region has a plurality of color filter layers which are formed at least either of the pair of substrates and which have center transmission wavelengths λ_k ($k = 1, 2, \dots, N$; $N > 2$);

a cell thickness d of the pixel region is substantially constant regardless of the center transmission wavelengths λ_k ; and

the product of the cell thickness d of the pixel region having the color filter layer with the shortest center transmission wavelength λ_k and birefringence $\Delta n(\lambda_k)$ of liquid crystal molecules against the center transmission wavelength λ_k satisfies a relationship expressed by:

$$250 \text{ nm} < \Delta n(\lambda_k) \cdot d < 450 \text{ nm}.$$

6. A liquid crystal display according to claim 1, wherein the area ratio is in the range from 0.5 to 0.9.

7. A liquid crystal display according to claim 1, wherein:
the threshold voltage of the low effective voltage area is higher than the threshold voltage of the other area by a predetermined voltage difference; and

the voltage difference is in the range from 0.1 V to 2.0 V.

8. A liquid crystal display according to claim 1, wherein the area ratio varies depending on the center transmission wavelength λ of the color filter layer that the pixel region has.

9. A liquid crystal display according to claim 1, wherein the low effective voltage area has a dielectric layer formed with a predetermined thickness on at least either of the electrodes.

10. A liquid crystal display according to claim 9, wherein the dielectric layer is formed like stripes having a predetermined layer width and gap width.

11. A liquid crystal display according to claim 1, wherein the low effective voltage area has an electrode portion with blanks, formed on at least either of the electrodes.

12. A liquid crystal display according to claim 11, wherein the electrode portion with blanks is formed like stripes having a predetermined electrode width and gap width.

13. A liquid crystal display according to claim 1, wherein the low effective voltage area is provided in the vicinity of an end of the pixel region.

14. A liquid crystal display according to claim 1, wherein the liquid crystal is a nematic liquid crystal having negative dielectric constant anisotropy whose initial alignment is

vertical to a surface of the substrates.

15. A liquid crystal display according to claim 14, further comprising an alignment regulating structure for regulating the alignment of the liquid crystal provided on at least either of the substrates, wherein the pixel region has a plurality of alignment regions in which the liquid crystal is aligned in different directions.

16. A liquid crystal display comprising:

a pair of substrates provided opposite to each other and having electrodes on respective surfaces thereof opposite to each other;

a liquid crystal sealed between the pair of substrates;

a polymer obtained by polymerizing a polymeric component mixed in the liquid crystal; and

a pixel region having areas whose electro-optical characteristics are different from each other because of a difference between cell thicknesses thereof.

17. A liquid crystal display according to claim 16, wherein:

the pixel region has a different pre-tilt angle in each of the plurality of areas; and

the pre-tilt angle is relatively small in an area in which the cell thickness is relatively great.

18. A liquid crystal display according to claim 17, wherein the pre-tilt angle is obtained by varying a voltage applied

when the polymeric component is polymerized for each of the plurality of areas.

19. A liquid crystal display according to claim 16, wherein the pixel region has a dielectric layer which is formed in an area having a relatively small cell thickness and on the electrode on either of the pair of substrates.

20. A liquid crystal display according to claim 19, wherein:

the dielectric layer is formed at the periphery of the pixel region, the display further comprising an opening where the dielectric layer is not formed in the pixel region.

21. A liquid crystal display according to claim 20, wherein the dielectric layer has an inclined surface inclined toward the opening.

22. A liquid crystal display according to claim 19, wherein the dielectric layer has a thickness equal to or greater than 0.1 μm and equal to or smaller than the cell thickness.

23. A liquid crystal display according to claim 22, wherein the dielectric layer has a thickness equal to or greater than 0.1 μm and equal to or smaller than one-half of the cell thickness.

24. A liquid crystal display according to claim 20, further comprising a protrusion which is formed on the other of the pair of substrates and which is provided substantially in the

middle of the opening when viewed in a direction perpendicular to a surface of the substrate.

25. A liquid crystal display comprising:
a pair of substrates provided opposite to each other;
a liquid crystal sealed between the pair of substrates;
and
an alignment film including a polymeric component and
a polymerization initiator in a density that varies in each
of a plurality of areas in the pixel region.

26. A liquid crystal display according to claim 25, wherein
the pixel region has a different cell thickness in each
of the plurality of areas; and
the density is relatively high in an area in which the
cell thickness is relatively great.